

Energy Basics

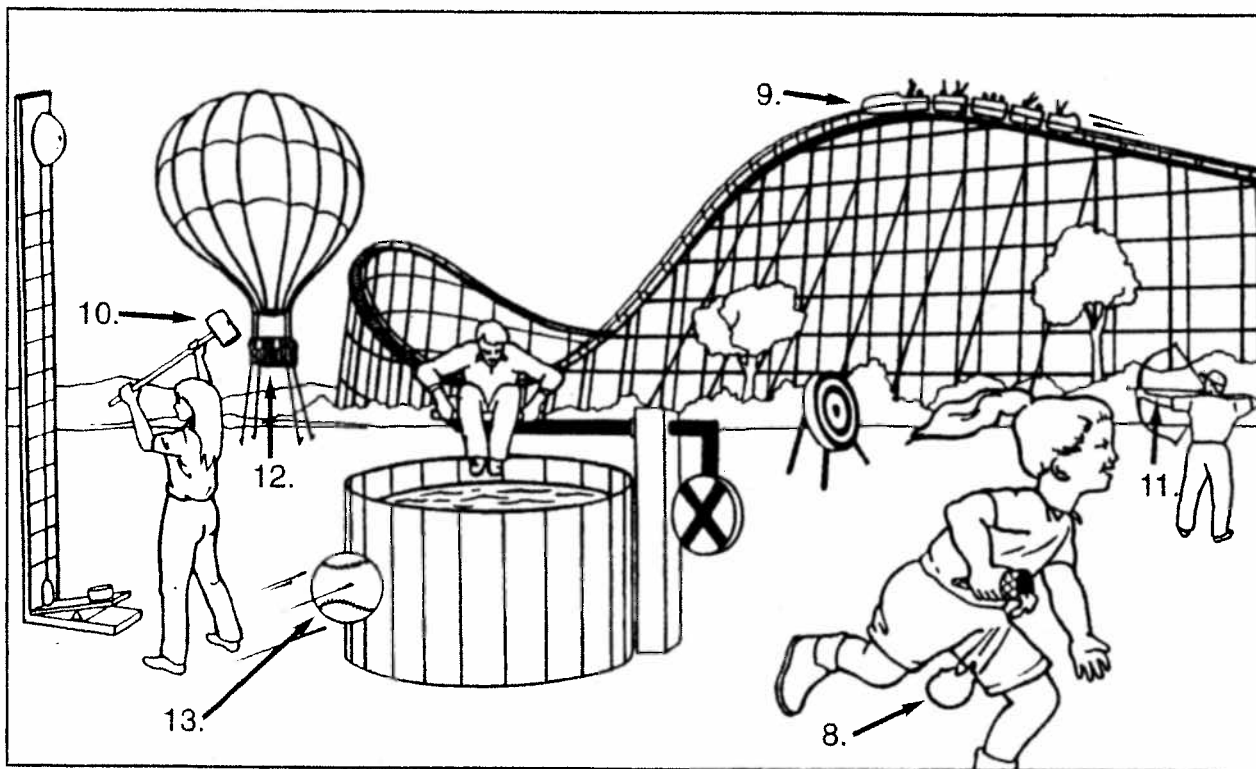
When you hear the word *energy*, you may think of pep or alertness. Scientists, however, define this term differently. In science, **energy** is the ability to do work. Work is the result of a force moving an object from one place to another.

There are two kinds of energy: kinetic energy and potential energy. **Kinetic energy** is energy that makes something move. **Potential energy**, on the other hand, is energy that could cause something to move but doesn't. A skier perched at the top of a snowy hill and a hockey star winding up for the winning slap shot both have potential energy. When potential energy is released, it becomes kinetic energy.

Write P or K to indicate whether each phrase describes potential or kinetic energy.

- | | |
|---|---|
| 1. _____ energy at rest | 5. _____ a mousetrap set and ready to spring |
| 2. _____ the release of stored energy | 6. _____ a basketball flying toward the basket |
| 3. _____ energy of motion | 7. _____ a sled released at the top of a snowy hill |
| 4. _____ a dam holding back a river's water | |

An amusement park contains many examples of kinetic and potential energy. Look closely at the numbered arrows in the picture below. On the corresponding blanks at the bottom of the page, write whether kinetic or potential energy is shown.



- | | |
|-----------|-----------|
| 8. _____ | 11. _____ |
| 9. _____ | 12. _____ |
| 10. _____ | 13. _____ |

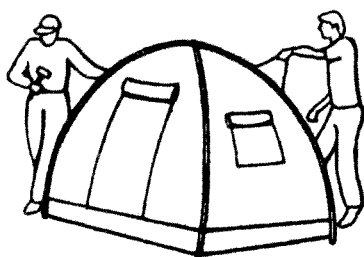
Examining Energy

The law of conservation of energy states that the amount of energy that exists in the universe always remains the same. Energy can, however, change from one form to another. Think about what happens to the electrical energy used to turn on a lamp. It changes to light energy and heat energy as the lightbulb gives off light and becomes hot. There are many forms of energy:

- **Mechanical energy** makes things move.
- **Heat energy** causes an increase in temperature.
- **Light energy** makes things visible.
- **Electrical energy** usually results from the flow of tiny particles called electrons. Electrical energy flows through materials such as iron, steel, and copper wire.
- **Chemical energy** is stored in a substance and released during a chemical reaction. During a chemical reaction, a new substance is produced.
- **Nuclear energy** is released when we change the nucleus of very small particles of matter called atoms. Nuclear energy is also called atomic energy. Nuclear energy is a powerful but potentially dangerous form of energy.
- **Radiant energy** is made up of heat energy and light energy. Solar energy, the energy from the sun, is a form of radiant energy. It is produced by nuclear energy.

Fill each blank with the appropriate type of energy described above.

During their spring campout, a group of campers called the Falcons used many



different forms of energy. They started out by pitching the tents. This required a lot of (1.) _____

energy. After the tents were up, it was time for lunch.

Since there were no outlets to provide

(2.) _____ energy, the boys decided to use

aluminum foil to create an oven which captured

(3.) _____ energy from the sun. They used the (4.) _____

energy from the sunlight to warm their food. After they ate, their bodies used

(5.) _____ energy to digest the food. Then the campers used

(6.) _____ energy to take a long hike. It began to grow dark before the campers reached their tents, so they turned on their flashlights. The

(7.) _____ energy in the batteries changed into the

(8.) _____ energy which the campers used to see the trail in the dark.

9. Find out more about nuclear energy. What is its most common use?
